

FORTRAN/RT-11 EXTENSIONS

Release Notes

Order No. AA-C891A-TC

FORTRAN/RT-11 EXTENSIONS Version 1B

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PREFACE

The purpose of this document is to alert the users of the FORTRAN/RT-11 EXTENSIONS to some special considerations in the release of this product. These considerations include:

1. Compatibility of FORTRAN/RT-11 Extensions
with RT-11 version 3
and with FORTRAN IV version 2
2. VT-55 Programming Manual
Order No. AA-4949A-TC
3. DECgraphic-11 FORTRAN Reference Manual
Order No. DEC-11-GFRMA-A-D
4. RT-11/FORTRAN Graphics Extensions User's Guide,
Update Notice No. 1
Order No. DEC-11-LFGMA-A-DN1
5. FORTTRAN/RT-11 Extensions Manual
Order No. AA-2124D-TC

1. Compatibility of FORTRAN/RT-11 Extensions with RT-11 version 3 and with FORTRAN IV version 2

The purpose of this new release of the FORTRAN/RT-11 EXTENSIONS is to ensure its compatibility with RT-11 version 3 and FORTRAN IV version 2. This release of this software may not be compatible with previous versions of RT-11 or FORTRAN.

The FORTRAN/RT-11 EXTENSIONS package may be used with any configuration of FORTRAN IV version 2 and with any configuration of RT-11 version 3 for the Single Job (SJ) or Foreground/Background (FB) monitors only.

SPECIAL NOTES:

DECgraphic-11

The DECgraphic-11 Package is now distributed as a source kit ONLY. Therefore, you will find these sources in the BINARY kit for the FORTRAN/RT-11 Extensions kits. Also, since the sources are distributed as part of the binary kit, the listings of these sources are not available on microfiche.

The build instructions for DECgraphic-11 are part of these release notes. They replace Chapter 4 of the DECgraphic-11 FORTRAN Reference Manual.

FORTRAN/RT-11 Extensions

The standard configuration, defined by the file CONFIG.MAC, may not correspond to your particular hardware configuration. Therefore, you must follow the directions in the FORTRAN/RT-11 Extensions Manual in Chapter 1, Section 1.5, in order to tailor the software to function properly with your hardware. Note that errors may be generated if the configuration defined by CONFIG.MAC does not match EXACTLY your configuration, even if you request action only from the part of the configuration that does match.

RESTRICTIONS:

With respect to RT-11, the FORTRAN/RT-11 EXTENSIONS may NOT be used with the RT-11 Extended Memory (XM) monitor.

Although the "virtual array" capability of FORTRAN IV version 2 may be used in programs that also use the FORTRAN/RT-11 EXTENSIONS, arguments passed to components of this package may NOT be elements of a "virtual array."

2. VT55 Programming Manual (Order No. AA-4949A-TC)

Since the original publication of this document, minor changes have been made to the software that the manual describes and to the RT-11 operating system, which is also referenced in the manual. In addition, some reference material mentioned in this manual has been changed.

The following portions of this document should be corrected:

A. Page 1-4, Section 1.6. Under the heading Languages

The lines reading:

PDP-11 FORTRAN Language Reference Manual
(DEC-11-LFLRA-C-D)

RT-11/RSTS/E FORTRAN IV User's Guide
(DEC-11-LRRUA-A-D)

should read:

PDP-11 FORTRAN Language Reference Manual
(DEC-11-LFLRA-C-D and DEC-11-LFLRA-C-DN1)

RT-11/RSTS/E FORTRAN IV User's Guide
(DEC-11-LRRUB-A-D)

RT-11 FORTRAN IV Installation Guide
(DEC-11-LRSIA-A-D)

B. Page 1-5, Section 1.6. Under the heading Operating Systems

The lines reading:

RT-11 System Reference Manual
(DEC-11-ORUGA-C-D-DN1-DN2)

should read:

Introduction to RT-11
(DEC-11-ORITA-A-D)

RT-11 System User's Guide
(DEC-11-ORGDA-A-D)

RT-11 Advanced Programmer's Guide
(DEC-11-ORAPA-A-D)

RT-11 System Message Manual
(DEC-11-ORMEB-A-D)

RT-11 System Generation Manual
(DEC-11-ORGMB-A-D)

RT-11 System Release Notes
(DEC-11-ORNRB-A-D)

C. Page 2-1.

At the bottom of the page, add the following text:

2.1.1 PLOT55 As a Function Subprogram

FORTRAN control of the VT55 provided by the subroutine PLOT55 can also be accessed via a function subprogram called IPLT55. A FORTRAN statement of the form

```
IERR=IPLT55(ICMD,IX,IY,ITBL)
```

or

```
IERR=IPLT55(ICMD,IX,IY)
```

accesses this function subprogram. The arguments in the function call statement have exactly the same meaning as those previously described for the PLOT55 subroutine. The result of the function IERR can be any integer variable, and its value reflects any error condition that may have been detected by the function.

After the execution of the IPLT55 statement, the variable IERR has a value zero (0) if no errors were detected.

If an error was detected, IERR has the value of minus one (-1). This condition (IERR=-1) occurs under the following circumstances:

- The total number of arguments in the function call statement does not equal three (3) or four (4).
- The value of the first argument (ICMD) is less than zero (0) or greater than thirteen (13).
- The first argument (ICMD) is omitted or defaulted.
- In a "plot graph" call (ICMD=3), either the second (IX) or the third (IY) argument is omitted or defaulted.
- In a "display text" call (ICMD=12), the third argument, which is used to provide text, is omitted or defaulted.

These are the only error conditions reported by IPLT55. The above list also describes the only circumstances in which omitted arguments create errors. In all other cases, omitting an argument name implies the value zero (0) for that argument position. Because a zero (0) value is interpreted by the function and subroutine differently for various values of ICMD, all arguments should be given explicitly unless it is clearly stated in this manual that the arguments are not necessary.

D. Page 2-2.

Add the following text immediately after NOTE #3:

4. Both PLOT55 and IPLT55 require at least two (2) commas in each call, whether or not arguments are omitted.

E. Page A-1, Section A.1, Subsection 3, Sub-subsection C.

The lines reading:

RT-11 F/B V02C

Then the system will display a period (.) at the left margin, meaning that it is ready to accept system commands.

should read:

RT-11FB V03-02

Then the system will execute the system start-up file (STARTF.COM) if it is present on the system media. The system then prints its prompt (.), indicating that it is ready to accept commands.

F. Page A-3, Section A.2.1.

The line reading:

*program=object,PLOT55/F<CR>

should read:

*program=object,PLOT55[/F]<CR>

G. Page A-3, Section A.2.1.

Before the sentence that begins:

The "/F" switch tells the LINK program....

insert the following text:

The /F switch is required only if the FORTRAN object time system (OTS) library (FORLIB.OBJ) is not part of the system library (SYSLIB.OBJ).

3. DECgraphic-11 FORTRAN Reference Manual (Order No.
DEC-11-GFRMA-A-D)

Since the original publication of this document, minor changes have been made to the software that the manual describes and to the RT-11 operating system, which is also referenced in the manual. In addition, some reference material mentioned in this manual has been changed.

Although the Software Product Description for the FORTRAN/RT-11 EXTENSIONS clearly states that this product is compatible only with the RT-11 operating system, this manual makes some mention of the RSX-11M operating system. Therefore, ignore all references to the RSX-11M operating system. In particular, disregard all of Chapter 5.

The build procedures for DECgraphic-11 are included in these release notes. Use the pages in Section B below to replace all of Chapter 4 of the DECgraphic-11 FORTRAN Reference Manual.

The following portions of this document should be corrected:

Page vii. Under ASSOCIATED DOCUMENTATION

The lines reading:

PDP-11 FORTRAN Language Reference Manual
(DEC-11-LFLRA-C-D)

RT-11/RSTS/E FORTRAN IV User's Guide
(DEC-11-LRRUA-A-D)

RT-11 System Reference Manual
(DEC-11-ORUGA-C-D-DN1-DN2)

should read:

PDP-11 FORTRAN Language Reference Manual
(DEC-11-LFLRA-C-D and DEC-11-LFLRA-C-DN1)

RT-11/RSTS/E FORTRAN IV User's Guide
(DEC-11-LRRUB-A-D)

RT-11 FORTRAN IV Installation Guide
(DEC-11-LRSIA-A-D)

Introduction to RT-11
(DEC-11-ORITA-A-D)

RT-11 System User's Guide
(DEC-11-ORGDA-A-D)

RT-11 Advanced Programmer's Guide
(DEC-11-ORAPA-A-D)

RT-11 System Message Manual
(DEC-11-ORMEB-A-D)

RT-11 System Generation Manual
(DEC-11-ORGMB-A-D)

RT-11 System Release Notes
(DEC-11-ORNRB-A-D)

B. Chapter 4.

Disregard all of Chapter 4. Replace all of Chapter 4 with the following nine pages. These pages provide the information necessary to build a graphics library from the distributed software.

CHAPTER 4

BUILDING A DECGRAPHIC-11 SYSTEM LIBRARY

This chapter describes the operation of the DECgraphic-11 system. It summarizes the contents of the supplied software distribution kit, describes procedures for building a library from this kit, and discusses how to link your programs for use in the graphics system.

4.1 THE CONTENTS OF THE DISTRIBUTION KIT

The FORTRAN subroutines used to perform graphics functions in the DECgraphic-11 system are supplied as a source kit. The distribution kit consists of three files:

- GRPACK.CND
- GRSUBS.MAC
- COND.SAV

GRPACK.CND and GRSUBS.MAC are conditionalized source files from which you can build a graphics library. COND.SAV is a special conditionalizing program used in building a library.

4.2 BUILDING THE DECGRAPHIC-11 LIBRARIES

You build a library "customized" for your particular hardware configuration by following the procedure outlined below. You type the text that is underlined in the sample procedure; the system types the rest. An explanation of the questions asked in the sample procedure is included after the output below.

This procedure assumes that you have copied the DECgraphic-11 distribution kit to the device DK. It also assumes that you have no files with the extension .OB or .FO.

The result of this procedure is a graphics library called GLIB.OBJ.

.ASSIGN TT LST <RET>

.ASSIGN TT LOG <RET>

.LOA BA <RET>

.LOA TT <RET>

.R COND <RET>

FILE NAME?
GRPACK <RET>

DO YOU HAVE A VS60 (Y OR N) ?
Y <RET>

TWO SCOPES (Y OR N) ?
N <RET>

ERROR MESSAGE TEXT (Y OR N) ?
Y <RET>

STOP --

.R BATCH <RET>

*GRBILD <RET>

\$JOB/RT11

?PIP-F-FILE not found DK:*.OB

*ERRORS DETECTED: 0

ADVANC

AGET

APNT (Lists all routines.)

^O (Type CTRL/O to suppress this listing.)

\$EOJ

END BATCH

The various questions asked by the conditionalizer program COND allow you to select the specific options that you desire. The questions asked during the interaction are described below.

1. DO YOU HAVE A VS60 (Y OR N) ?

The package may be configured for either a VS60 (Y) or VT11 display processor (N).

2. TWO SCOPES (Y OR N) ?

If you are configuring for a VS60, it is possible to have a dual-scope system. This question is not asked if the VT11 library is being built and you have answered N to question 1.

3. ERROR MESSAGE TEXT (Y OR N) ?

You can choose to eliminate the text of the error messages produced by the package in order to save space. In this case, any errors that occur result in printing an error number that can then subsequently be interpreted by referencing the error message table (see Appendix B).

Section 4.3 contains complete examples of building libraries for use with the VT11 and VS60.

4.3 LINKING USER PROGRAMS

After you have built a graphics library (GLIB.OBJ), you can link your program by issuing the following commands:

If the FORTRAN library (FORLIB.OBJ) is concatenated with the system library (SYSLIB.OBJ), the command string is

```
.LINK userprogram.FOR, GLIB <RET>
```

Otherwise the command string is

```
.LINK userprogram.FOR, GLIB, FORLIB <RET>
```

where userprogram is the name of the program that requires the graphics library.

4.4 PERFORMING USR OPERATIONS

A variety of operations require the RT-11 user service routine (USR) to be swapped into memory (e.g., ASSIGN, CLOSE). When you are performing an operation of this kind in a graphics application, first issue a call to the DECgraphic-11 STOP subroutine to stop the display processor. Call the CONT subroutine to restart the display after the USR operation has completed. (See Sections 2.1.2 and 2.1.3 for a description of these two subroutines.) If you do not follow the procedure outlined above, the display disappears from the screen and the display processor hangs. The only way to avoid this situation is to issue a SET USR NOSWAP command, a far more core-costly solution. The SAVE and RSTR subroutines require a call to the STOP and CONT subroutines for similar reasons. (See Section 2.9.3 for an example.)

4.5 SAMPLE PROCEDURES

The following examples illustrate the process of building separate libraries for VT11 and VS60 systems.

4.5.1 VT11 Procedures

The following is an example build procedure for the VT11, with error-message text.

```
.ASS TT LST <RET>
.ASS TT LOG <RET>
.LOA TT <RET>
.LOA BA <RET>
.R COND <RET>
FILE NAME ?
GRPACK <RET>
DO YOU HAVE A VS60 (Y OR N) ?
N <RET>
ERROR MESSAGE TEXT (Y OR N) ?
Y <RET>
STOP --
.R BATCH <RET>
*GRBILD <RET>
$JOB/RT11
?PIP-F-File not found DK:*.OB
ERRORS DETECTED: 0
ADVANC
AGET
APNT
APUT
AREA
ATTACH
AVECT
BUFTST
CHANGA
CHANGE
CHANGP
CHANGT
CMPRS
COPY
CVSCAL
DETACH
DPTR
DPYNOP
DPYWD
ERAS
```

ERASP
ERROR
ESUB
FIGR
FINDGF
FLASH
FPUT
FREE
GET
GRID
INIT
INSERT
INTENS
LINTYP
LPEN
LVECT
MENU
MODE
NMBR
NOSC
OFF
ON
POINTR
PTRCHK
PUTCHR
PUTEM
PUTWD
RPNT
RSTR
SAVE
SCOPE
SCAL
SENSE
SUBP
SVECT
TAGSRH
TEX
TEXOO
TEXT
TRAK
TRAKXY
VECT
VECTS
WINDOW
XGRA
YGRA
ZGRA

*EOJ

END BATCH

4.5.2 VS60 Procedures

The following is an example build procedure for one VS60, with error-message text.

```
.ASS TT LST <RET>
.ASS TT LOG <RET>
.LOA TT <RET>
.LOA BA <RET>
.R COND <RET>

FILE NAME ?
GRPACK <RET>

DO YOU HAVE A VS60 (Y OR N) ?
Y <RET>

TWO SCOPES (Y OR N) ?
N <RET>

ERROR MESSAGE TEXT (Y OR N) ?
Y <RET>

STOP --

.R BATCH <RET>
*GRBILD <RET>

$JOB/RT11

?PIP-F-File not found DK:*.OB

ERRORS DETECTED:  0

ADVANC
AGET
APNT
APUT
AREA
ATTACH
AVECT
BUFTST
CHANGA
CHANGE
CHANGP
CHANGT
CMPRS
COPY
CVSCAL
DETACH
DPTR
DPYNOP
DPYWD
ERAS
ERASP
ERROR
ESUB
FIGR
```

FINDGF
FLASH
FPUT
FREE
GET
GRID
INIT
INSERT
INTENS
LINTYP
LPEN
LVECT
MENU
MODE
NMBR
NOSC
OFF
ON
POINTR
PTRCHK
PUTCHR
PUTEM
PUTWD
RPNT
RSTR
SAVE
SCOPE
SCAL
SENSE
SUBP
SVECT
TAGSRH
TEX
TEXOO
TEXT
TRAK
TRAKXY
VECT
VECTS
WINDOW
XGRA
YGRA
ZGRA

\$EOJ

END BATCH

The following is an example build procedure for two VS60s, with error-message text.

.ASS TT LST <RET>
.ASS TT LOG <RET>
.LOA TT <RET>
.LOA BA <RET>

.R COND <RET>

FILE NAME ?
GRPACK <RET>

DO YOU HAVE A VS60 (Y OR NO) ?
Y <RET>

TWO SCOPES (Y OR N) ?
Y <RET>

ERROR MESSAGE TEXT (Y OR N) ?
Y <RET>

STOP --

.R BATCH <RET>
*GRBILD <RET>

\$JOB/RT11

?PIP-F-File not found DK:*.OB

ERRORS DETECTED: 0

ADVANC
AGET
APNT
APUT
AREA
ATTACH
AVECT
BUFTST
CHANGA
CHANGE
CHANGP
CHANGT
CMPRS
COPY
CVSCAL
DETACH
DPTR
DPYNOP
DPYWD
ERAS
ERASP
ERROR
ESUB
FIGR
FINDGF
FLASH
FPUT
FREE
GET
GRID
INIT
INSERT
INTENS
LINTYP
LPEN
LVECT
MENU

MODE
NMBR
NOSC
OFF
ON
POINTR
PTRCHK
PUTCHR
PUTEM
PUTWD
RPNT
RSTR
SAVE
SCOPE
SCAL
SENSE
SUBP
SVECT
TAGSRH
TEX
TEXOO
TEXT
TRAK
TRAKXY
VECT
VECTS
WINDOW
XGRA
YGRA
ZGRA

\$EOJ

END BATCH

4. RT-11/FORTRAN Graphics Extensions User's Guide,
Update Notice No. 1, (Order No. DEC-11-LFGMA-A-DN1)

This document contains a number of minor typographical errors that may lead to some confusion if overlooked. The following portions of this document should be corrected:

A. Page 1-1, Section 1.1.

The last line of the section reads:

or DECpack disk.

The last line should read:

DECpack or DATA CARTRIDGE disk.

B. Page 1-8, Section 1.2.

The third line of the second paragraph of the NOTE reads:

(VTLIB/LVLIB/LPSLIB), the monitor .INIT

This line should read:

(VTLIB/LPSLIB/GLIB), the monitor .RESET

C. Page 2-1, Section 2.1.

Part of the instructions for building the library (VTLIB) reads:

```
.R PIP
*VTOBJ.OBJ=VTA.OBJ,VTB.OBJ,VTC.OBJ,STD.OBJ,VTE.OBJ,VTF.OBJ
*VTOBJ.OBJ=VTOBJ.OBJ,VTG.OBJ,VTH.OBJ,VTI.OBJ,VTJ.OBJ,VTK.OBJ
*VTOBJ.OBJ=VTOBJ.OBJ,VTL.OBJ,VTM.OBJ,VTU.OBJ
```

These instructions should read:

```
.R PIP
*VTOBJ.OBJ=VTA.OBJ,VTB.OBJ,VTC.OBJ,STD.OBJ,VTE.OBJ,VTF.OBJ/B/U
*VTOBJ.OBJ=VTOBJ.OBJ,VTG.OBJ,VTH.OBJ,VTI.OBJ,VTJ.OBJ,VTK.OBJ/B/U
*VTOBJ.OBJ=VTOBJ.OBJ,VTL.OBJ,VTM.OBJ,VTU.OBJ/B/U
```

D. Page 2-1, Section 2.1.

The second line of the last paragraph on the page reads:

named TEST.F4 which uses the graphics support. The USR swaps in

This line should read:

named TEST.FOR, which uses the graphics support. The USR swaps in

E. Page 2-2, Section 2.1.

The linking instructions read:

```
.R LINK
*TEST,MAP=TEST,VTLIB/F
*^C
```

They should read:

```
.R LINK
*TEST,MAP=TEST,VTLIB[/F]
*^C
```

The /F switch should be used only if the FORTRAN library (FORLIB) has been concatenated with the system library (SYSLIB).

5. FORTRAN/RT-11 Extensions Manual (Order No. AA-2124D-TC)

This document contains a number of minor typographical errors that may lead to some confusion if overlooked. The following portions of this document should be corrected:

A. Page 1-7, Section 1.2.5.

The last two lines in the third paragraph read:

real-time extensions library (for example, VTLIB or LVLIB), use the monitor INIT command.

They should read:

real-time extensions library (for example, VTLIB) use the monitor RESET command.

B. Page 1-64, Section 1.4.18.

Under the explanation of ifirst, the description of the last range of valid channel numbers reads:

0,2,...,7 Range of channel numbers for LPS11 with dual sample-and-hold.

This description should read:

0,1,...,7 Range of channel numbers for LPS11 with dual sample-and-hold.

C. Page 1-79, Section 1.5.1.3.

The dialogue to the MACRO assembler reads:

.MACRO/LIST CONFIG
ERRORS DETECTED: 0

.

This dialogue should read:

.MACRO CONFIG
ERRORS DETECTED: 0

.

D. Page 1-79, Section 1.5.2.2.

The instructions for linking when FORLIB and SYSLIB are separate libraries read:

.LINK progrm,libnam/F

These instructions should read:

.LINK program,libnam,FORLIB

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NOTE: This form is for document comments only. DIGITAL will use comments submitted on this form at the company's discretion. Problems with software should be reported on a Software Performance Report (SPR) form. If you require a written reply and are eligible to receive one under SPR service, submit your comments on an SPR form.

Did you find errors in this manual? If so, specify by page.

Did you find this manual understandable, usable, and well-organized? Please make suggestions for improvement.

Is there sufficient documentation on associated system programs required for use of the software described in this manual? If not, what material is missing and where should it be placed?

Please indicate the type of user/reader that you most nearly represent.

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